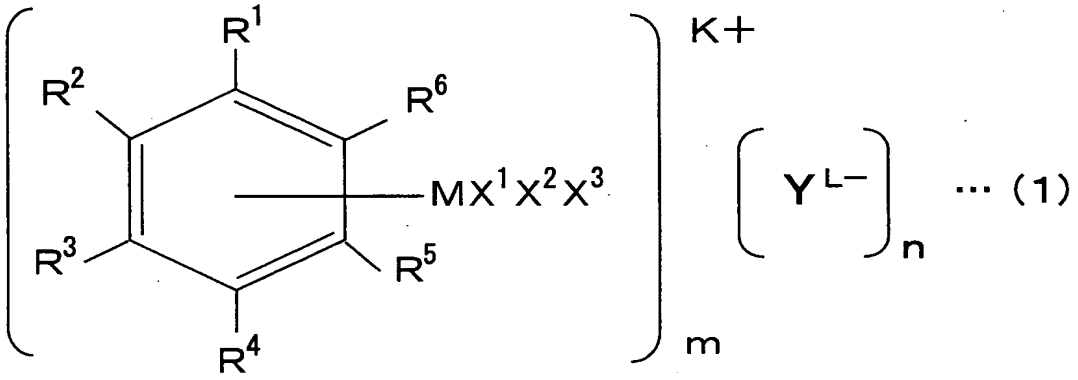
[TITLE OF DOCUMENT] SPECIFICATION

[TITLE OF THE INVENTION] PROCESS FOR REDUCTION OF CARBON DIOXIDE WITH ORGANOMETALLIC COMPLEX

[CLAIMS]

[CLAIM 1] A reducing process of carbon dioxide, comprising mixing carbon dioxide and water with an organometallic complex represented by general formula (1)



where R^1, R^2, R^3, R^4, R^5, and R^6 independently represent a hydrogen atom or a lower alkyl group, M represents an element that can be coordinated to the benzene ring, X^1 and X^2 represent nitrogen-containing ligands, X^3 represents a hydrogen atom, a carboxylic acid residue, or H_2O, X^1 and X^2 may be bonded to each other, Y represents an anion species, K represents a valency of a cation species, L represents a valency of an anion species, K and L independently represent 1 or 2, and K, m, L, and n are related to one another by K x m = L x n.

[CLAIM 2] A reducing process of carbon dioxide as set forth in Claim 1, wherein, in the organometallic complex

represented by general formula (1), M represents a group 8 element or a group 9 element of the periodic table.

[CLAIM 3] A reducing process of carbon dioxide as set forth in Claim 2, wherein in the organometallic complex represented by general formula (1), M is Ru.

[CLAIM 4] A reducing process of carbon dioxide as set forth in one of Claims 1, 2, and 3, wherein, in the organometallic complex represented by general formula (1), Y is one of a formate ion, a halide ion, a triflate ion, a sulfate ion, a perhalogen acid ion, a tetrafluoroborate ion, a hexafluorophosphoric acid ion, and a thiocyanate ion.

[CLAIM 5] A reducing process of carbon dioxide as set forth in one of Claims 1 to 4, wherein a pH of a reaction system mixing the organometallic complex, carbon dioxide, and water is 6 or below.

[CLAIM 6] A reducing process of carbon dioxide as set forth in one of Claims 1 to 5, wherein, when reducing the carbon dioxide by mixing the organometallic complex, carbon dioxide, and water, the pH of the reaction system is changed.